



## Full Length Research Article

### CASE STUDY: 5 DAYS A WEEK WORKING IN ASSEMBLY LINES OF AUTOMOBILE COMPANY RESULTS IN WORK LIFE BALANCE AND EMPLOYEE SATISFACTION

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#### ABSTRACT

In the economic scenario that prevailed in 2012-13, when automobile manufacturing units all over India were facing a decline, it became important to reduce operational costs and find out various alternatives. This paper presents the 5 days working model that was undertaken at Tata Motors Limited, Medium & Heavy Commercial Vehicle Plant situated at Lucknow after evaluating various options. This manufacturing plant started 5-days a week working model (with extended 1.5 hours from Mon to Fri). In the month of August 2016 this model successfully completed its 3rd year of working. A feedback from employees was taken through survey on their satisfaction and their work life balance. This model has helped to address the business needs, to reduce costs and improve employee morale with work life balance

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#### INTRODUCTION

Historically speaking it was Henry Ford who introduced the five-day, eight-hour per day, work-week. On September 25th 1926, Henry Ford announced the 8-hour, 5-day work week. This was a shock for many because other factories had their workers work 6 days a week for extensive hours a day. Ford was very considerate of his workers and believed that they needed time for their family. He implemented a five-day work-week and, in the process, effectively invented the modern weekend. 5 Days working model has been a trend in the IT, BPO and some similar sectors, an implementation of 5 day working model in core Manufacturing sector has its own difficulties and modalities in a country like India, as these are labor intensive sectors. Tata Motors Lucknow (TML-Lucknow) is an important production facility of Tata Motors Limited & was established in 1992 to meet the growing demand for Commercial Vehicles in the Indian market. The state of art plant is strongly backed up by a Research Centre & Service set-up to support with latest technology & cater to the complexities of automobile manufacturing. This plant rolls out commercial vehicles & is specialized in the designing &

manufacturing of a range of modern buses which includes Low-floor, Semi Low-floor, and High Deck & CNG Buses. The Lucknow facilities also specialize in integral bus manufacturing & have joint venture with Company, Tata Marco Polo Motors Ltd. for manufacture of Bus bodies. With the economic slowdown in 2012 –13, market started shrinking & demand decreased, as evident in the graph 40% drop in consumer demand called for major cost costing initiatives. (Fig. 1). It also raised the need for revamping operations strategy so that plant could be run in more efficient manner. The manufacturing mainly consists of following assembly lines:

- Assembly Line-1
- Assembly Line-2
- Assembly Line-3
- Integral Bus factory line

Feeder shops, which are part of operations:

- Weld shop
- Paint shop
- Transmission shop

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The decrease in market demand needed a solution to be worked out by reducing cost, increasing capacity utilization, optimizing manpower and keeping the basic values of the corporate Group intact

The need for the project originated from the various macroeconomic and internal factors affecting the company:

### Macroeconomic and Internal Factors

#### Economic Scene

- Cyclical nature of commercial vehicle demand.
- Slump in industrial productivity
- Falling contractor margins
- Rising diesel prices

The automobile industry is cyclical and historically has experienced downturns characterized by oversupply and weak demand. Many factors affect the industry, including general economic conditions, consumer confidence, personal discretionary spending levels, interest rates and credit availability. The automobile industry also experiences seasonal variations in revenue. Demand for automobiles is generally lower during the winter months than in other seasons, particularly in our market areas that experience harsh winters. The Society of Indian Automotive Manufacturers had downsized its forecast for the year 2013. According to the forecast there was a possibility of 11-13% contraction in the volumes of Medium and Heavy Commercial Vehicles in the year 2013 (Fig. II). Hence the need to prepare for the tough times ahead.

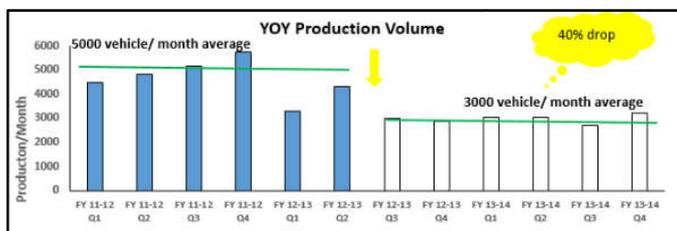


Fig 1. YOY Production Volume at Tata motors

Segment	F13 Growth (Oct 12 Est.)
Cars	1 – 3%
UVs	50 – 52%
Vans	2 – 4%
<b>PV Total</b>	<b>8 – 10%</b>
LCV Goods	14 – 16%
<b>MHCV Goods</b>	<b>(11) – (13)%</b>
Passenger Buses	5 – 7%
<b>Total CV</b>	<b>3 – 5%</b>
<b>2W</b>	<b>5 – 7%</b>
3W Goods	(7) – (9)%
3W Passenger	1 – 3%
<b>3W Total</b>	<b>0 – 2%</b>
<b>Auto Total</b>	<b>5 – 7%</b>

Source: SIAM Website. 25th Dec 2012

Fig. 2. Revised Automotive Sector Forecast for 2013

Other observations from the industry are:

- 11 - 13 % reduction was expected in FY 2012-13 M&HCV Demand– SIAM Forecast Report 2012-13
- More than 30 -35 % Capacity underutilization across industry
- Total CV demand was expected to grow only by 3 - 5 % in FY 2012-13
- Domestic Market was on a downhill with 10 % drop from FY 12 to FY 13 (Fig. 3).

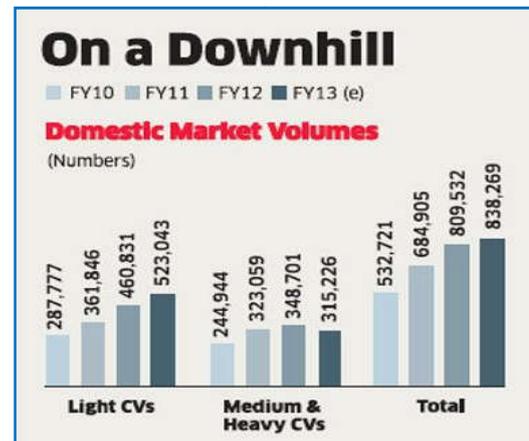


Fig. 3. M&HCV Volumes, Source: Economic Times, 3rd Dec 2012

**Need for Work-Life Balance:** In the Skip Level Meetings with employees conducted in the plant with employees, suggestions related to “5 Day working” have consistently appeared in the top 5 suggestions. According to the GALLUP Survey conducted under “2 things you would like to change about your company”, many suggestions came up with “5 Day working”. In a study conducted by The London School of Economics and Political Sciences, titled “Are there Day of the Week Productivity Effects”, Despite much debate about the productivity effects of flexible working and the regulation of working hours little attention is paid to temporal variance in productivity. This paper explains why one might expect to see productivity differences across days of the week. Although there is scant direct evidence on day-of-week productivity effects, studies suggest that the timing of labour inputs across and within days, such as the sequencing of work and rest periods, affect productivity-related outcomes such as illness, injury, sickness absence and error rates. The following trend was observed: (Fig. 4). Average Minutes worked per day of the week – It was observed that the average minutes worked per week greatly reduced on Saturday and Sunday. Percentage of Employees engaged in work – *It was observed that the percentage reduces drastically on the Saturday and Sunday.*

**Cost Proposition:** In the Plant, in the month of November – 2014, the Plant closed for 12 days. 7 Block Closure<sup>1</sup> and 5 days for Diwali holidays, due to less production requirement. The above graph shows that *Overheads*<sup>2</sup> expenditure for November – 2014, the reduction of INR 7.2 Crores. Lower overheads for less working days.

### Operational Effectiveness

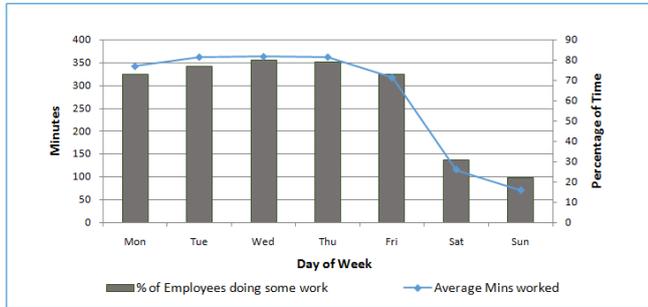
According to Michael E. Porter, Harvard Business School professor and world-renowned expert on management and strategy, organizational success requires both the right strategy and ‘operational effectiveness. For Michael Porter, operational

effectiveness refers to that domain of organizational activity that is about having functions that work well. These functions must fit together and work in conjunction with each other to implement strategy. Operational effectiveness involves any number of practices that enable an organization to (i) better utilize its resources, (ii) better implement its processes, and (iii) achieve its mission and goals. In other words, operational effectiveness is about continuously improving functional performance.

In the above study laid emphasis on the following approaches which be used to increase Operational Effectiveness:

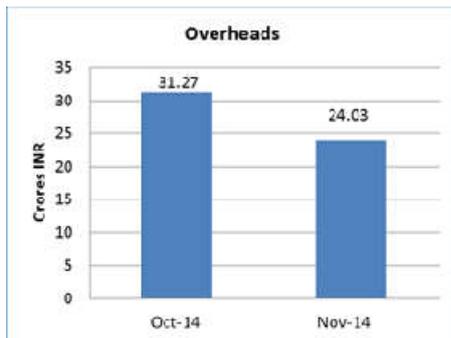
- Reduction in Defects
- Faster Time-to-Market
- Reduction in Cost
- Increasing Productivity

With a view to cater to the production slow down, need for Work-Life Balance & for operational and cost efficiency the following points and options were considered, evaluated and analyzed for bringing out the most optimum option.



Source: The London School of Economics and Political Sciences, titled "Are there Day of the Week Productivity Effects"

Fig. 4. Trend of Average minutes worked and Percentage of time worked



Source: TML Lko Trial Balance – Finance Dept.

Fig. 5. Overheads Expenditure for Oct-14 and Nov-14

According to an article published in the Harvard Business Review, Michael. E. Porter explains Operational Effectiveness as follows:

- All differences between companies in cost or price derive from the hundreds of activities required to create, produce, sell and deliver their products or services to customers
- Operational Effectiveness means performing similar activities better than rivals perform them
- It refers to any number of practices that allow a company to better utilize its inputs"Cost is generated by performing activities and Cost Advantage is generated by performing particular activities more Efficiently than others.

1) Block Closure Complete shutdown of the plant is called Block closure

2) Overhead is the costs required to run a business, but which cannot be directly attributed to any specific business activity, product, or service.

Tables 1. Per Day Expenses extended hours

Expenses Drivers	Per day Expenses Rs (In lacs)
Electricity Cost	9.1
Canteen Cost	2.9
Transport Cost	4.5
Contractual Expenses	4.2
Wage Cost	6.1
Expense per day (In lacs)	26.8

Block Closure Complete shutdown of the plant is called Block closure. Only few essential services are operational like security, maintenance etc. During Block closure, 1-day salary of flexible employees & 0.5 PL of permanent employee is deducted. These Block closure days are just a few, pre agreed days with the Union and so the benefit too is limited. It was observed that plant was spending Rs. 27 lacs daily & major contributors are Electricity, Wages & Transport and Canteen & Food cost. Also savings potential from the four major options was worked out on annual basis. It revealed that Savings from Paid off day & 5 days with extended hours are more than the other options. (Figure 7) All options were compared on 5 parameters and maximum green areas were there in last 2 options. Options were evaluated using Pugh matrix and as per scoring, "5 days working with extended hours" scored highest point, so it was decided to start 5 days working with extended hours.

**Work Hours and Workweek in India**

Working Hours in India: As per the Factories Act 1948, every adult (a person who has completed 18 years of age) cannot work for more than 48 hours in a week and not more than 9 hours in a day. According to Section 51 of the Act, the spread over should not exceed 10-1/2 hours. Factories Act, 1948 specifies that weekly holiday on the first day of the week, which is Sunday or may be any other day, as may be approved in writing by the Chief Inspector of Factories, for a particular area is necessary. Under Section 52, there is provision for substitution of weekly holiday so that by complying with the requirements of this section, workers may be permitted to work on the day of weekly holiday. Provision also specifies on allowing compensatory holiday, in lieu of unavailed weekly holiday. As per the provisions of the Factories Act, 1948 a rest interval of at least half an hour should be provided, in such a way that no period of work shall exceed 5-1/2 hours.

**Weekly holidays:** No adult worker shall be required or allowed to work in a factory on the first day of the week (hereinafter referred to as the said day), unless—he has or will have a holiday for a whole day on one of the three days immediately before or after the said day, and Provided that no

substitution shall be made which will result in any worker working for more than ten days consecutively without a holiday for a whole day.

**Spread Over**

Section 56 of the Act stipulates that the period of work of an adult worker in a factory shall be so arranged that, inclusive of

**Evaluation of Options**

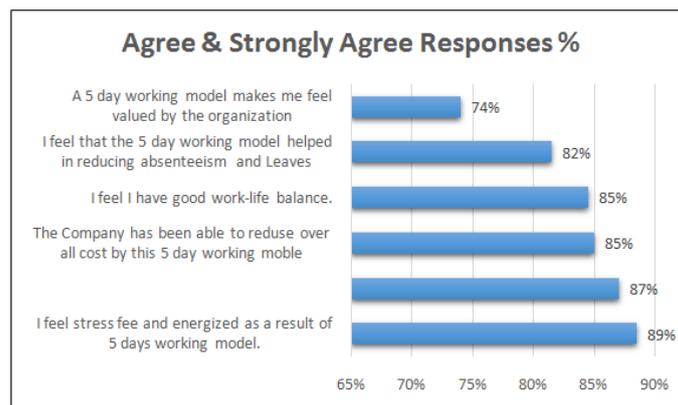
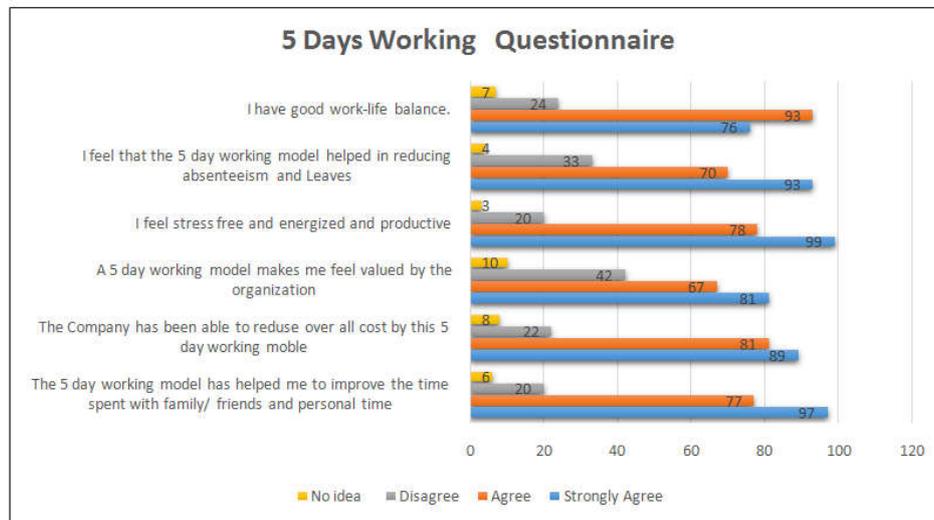
Per day saving summary	Flexible MP reduction	Block Closure	Paid off day In a week	5 days with extended 1.5 hrs.
	Option 1	Option 2	Option 3	Option 4
Electricity Cost	0.0	4.8	4.8	0.6#
Canteen Cost	0.6	2.2	2.2	0.5#
Transport Cost	0.0	4.5	4.5	4.5#
Contractual Expenses	0.0	2.1	2.1	2.1#
Wage Cost	1.4	6.1	0.0	1.3#
Cost Saving per day (In lacs)	2.1	19.7	13.6	9.1*
Total Days	305	18	52	52
Cost Saving per Annum (In lacs.)	630	355	708	812
Cost Saving per Annum(InRs.Crs.)	6.3	3.5	7.1	8.1
Mfg. Productivity	4.91	4.83	4.83	4.87
Mfg. Flexible Manpower Nos.	283	0	0	269
Employee Morale	6	5	9	7
Callup/day	119	142	142	142

\*wage cost saving for 305 days  
# other savings only for 52 days.

Table 2. Per day saving summary

Parameters	Wtg.	Max. Score	Flexi. MP reduction	Block Closure	Paid off day	5 days with etnd. hrs.
Saving per Annum(In crs.)	0.35	10	8	4	8	10
Mfg. Productivity	0.20	10	5	3	3	4
Mfg. Flexi Manpower Nos.	0.20	10	8	0	0	8
Employee Morale	0.15	10	5	4	8	6
Callup/day	0.10	10	4	6	6	6
Total Score	1.00	10	6.6	3.2	5.2	7.4

Fig. 8. Comparison of options based on 5 evaluation parameters using Pugh matrix



his intervals for rest under Section 55, it shall not spread over more than ten and half hours on any day.

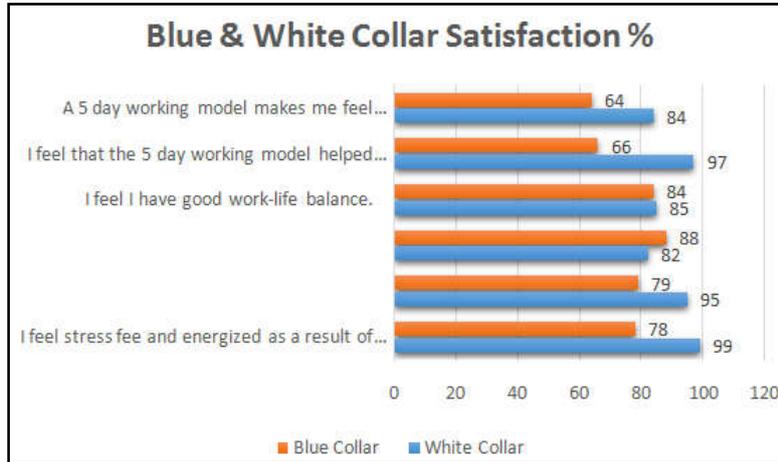
**Implication in the said case**

The working hours increase by 1.5 hrs. every day leading to an 10 hrs. punch in punch put and, 8.58 hrs. working hours, but as the total working hours is not more than 48,  $8.58 \times 5 = 42.9$  hrs. and the spread over is less than 10.5 hrs the current 5 day working model, thus the company has been able to sustain the proposal and is in line with the Legal requirement.

of the employees said that they feel stress free and energized as a result of 5 days working model. 74% and above positive.

**Automobile production trends**

The production trends in Commercial Vehicle Industry segment are shown in Fig VIII. The CV volumes did not fluctuate much in the last three years as shown in Fig 8. However, in future as and when the economy and commercial vehicle production takes a leap, the unit will need to go back to six-day week with two shift working to cater to higher volumes.



Category	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Passenger Vehicles	29,82,772	31,46,069	32,31,058	30,87,973	32,21,419	34,13,859
Commercial Vehicles	7,60,735	9,29,136	8,32,649	6,99,035	6,98,298	7,82,814
Three Wheelers	7,99,553	8,79,289	8,39,748	8,30,108	9,49,019	9,33,950
Two Wheelers	1,33,49,349	1,54,27,532	1,57,44,156	1,68,83,049	1,84,89,311	1,88,29,786
Grand Total	1,78,92,409	2,03,82,026	2,06,47,611	2,15,00,165	2,33,58,047	2,39,60,409

Fig. 8. Ref: <http://www.siamindia.com/statistics.aspx?mpgid=8&pgidtrail=13> Society of Indian Automobile Manufacturers (SIAM)

**Some points to be noted**

- The Transport & Canteen facility cost is born by the company management for the employees.
- All calculations are on pro-rata basis
- Volume is assumed to be same with little or no fluctuation for the last three years for cost calculation.

**Survey and Results**

With the 5-day model successfully completed its 3rd year of working, A survey/ questionnaire was administered to 200 employees, 80 White Collar employees with a mix of supervisory, managers and executive grade employees and 120 Blue Collar employees. The survey was administered across grades thus the age group ranging from 30-50 where under study. The questionnaire constituted of six basic questions to judge the satisfaction level of the employees on a 4-point scale, Strongly Agree, Agree, Disagree, No Idea. The questions were worded simply to get responses of the prospective of the employees. The results of the study are as under. 83 % of the employees have given responses in the first two categories- Agree or Strongly Agree indicating high level of satisfaction with the 5- day working. The responses are positive across grads, blue collar and white collar and across age groups. 90 % of the White collar and 77 % of the Blue collar employees have given positive responses. The satisfaction level among employees was seen to be high: 89%

Management and Union have harmonious industrial relations and good understanding of the priorities and business needs. Therefore, it should be a smooth transfer back to six-day week model whenever the situation demands.

**Conclusion**

**Cost Reduction:** A yearly saving of 52 days i.e. 17% reduction in working days amounting to 8 cores per annum.

**Carbon Footprint Reduction:** -Resulted in saving of about 435-ton emission CO2 on account of less electricity consumption and vehicle movement. (Carbon dioxide emissions into the atmosphere, and the emissions of other GHGs, are often associated with the burning of fossil fuels, like natural gas, crude oil and coal. While this is harmful to the environment, carbon offsets can be purchased in an attempt to make up for these harmful effects. A Carbon Footprint is historically defined as "the total set of greenhouse gas emissions caused by an individual, event, organization, product expressed as CO2e.)

**Production Time Available:** No change in available productive hours for the week. A shift may be started 1.5 hours early in the morning and B shift may end 1.5 hours late at night, thus continuing the 5- day week trend without losing on weekly production time available. However, this would be impractical and not acceptable to union and management both as, employees will have to start very early in the morning from

home for A shift and the B shift employees would be reaching back homes very late. (Assuming a maximum of 1.5 hours commuting time to the factory)

**Employee Satisfaction:** Huge employee satisfaction due to better Work life balance – more time with family. Employee can spend more time with family and this helps to relieve stress from coping with work and family commitments.

**Reduced absenteeism** as the week end helps in taking care of commitments, social needs and time away from work.

**Talent Retention** is also a result as the employees are satisfied and can even look at attaining higher education/ courses in the week ends.

**Benefit for both white and blue collar employees:** Not limited to office staff but to both blue and white collars employees including Manufacturing / shop floor getting the same benefit.

**Production related flexibility:** If any assembly line needs to work more than one shift, it continued with a six day a week schedule with two shift for the defined period so as to get more output as needed.

**Employee needs related flexibility: Greater flexibility** in days of work with reference to higher satisfaction on work life balance, also reducing absenteeism, this may be seen in the following two cases :

- Where the Saturday and Sunday are in sequence to a working day followed by a declared Holiday, That working day in between can be given as off, and the coming Saturday is made a working day.
- Where the Saturday and Sunday are in sequence to a festival which is not a declared holiday, that festival is made off and the coming Saturday is made working day.

#### Scope of further Study

Further studies may ratify the correlation of a 5 day working model to reduction in absenteeism, employee retention, possibility of catering to the requirement of employee's personal development through various profession courses.

Another point deliberation may be the impact of returning back to a 6 day working model in a manufacturing organization, due to higher production requirement through two shifts running. While production time remains same, by adding 1.5 hours every day, does it positivity relate to productivity, (Output/input)

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